

### REMARKS

This communication responds to the Office Action mailed on July 25, 2006. Claims 20, 32, and 34 are amended, no claims are canceled, and no claims are added. As a result, claims 20, 22, 24, 26, 28, 32, 34, and 37 are now pending in this Application.

#### §101 Rejection of the Claims

Claims 1, 22, 24, 26, and 28 were rejected under 35 USC § 101 because the Office asserts that “the applicants have recited steps that do nothing more than manipulate basic mathematical representations, hence the claim is unpatentable.” The Applicant respectfully traverses this rejection under § 101.

As noted in the Patent Office Guidelines for Examination, “If the examiner determines that the claim does not entail the transformation of an article, then the examiner shall review the claim to determine if the claim provides a practical application that produces a useful, tangible and concrete result. In determining whether the claim is for a ‘practical application,’ **the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is ‘useful, tangible and concrete.’**” AT&T, 172 F.3d at 1358-59, 50 USPQ2d at 1452. *Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility* (hereinafter, the “Guidelines”), pg. 20, October 2005. (emphasis added)

With respect to the Applicant’s claims 1, 22, 24, 26, and 28, it is respectfully noted that determining and assigning a transparency factor associated with a planar object surface, modulating the transparency of an image of an object, or calculating the transparency of such an image is **useful**, i.e. “(i) specific, (ii) substantial and (iii) credible ...” [*Id.* at pg. 20] (e.g., adjusting the transparency of an image may permit information of interest to be retained, such as the spatial relationship between a heart and a rib, as noted in the Application, and “[i]f the applicant has asserted that the claimed invention is useful for any particular practical purpose (i.e., it has a ‘specific and substantial utility’) and the assertion would be considered credible by a person of ordinary skill in the art, do not impose a rejection based on lack of utility.” M.P.E.P. § 2107.I). Determining or modulating transparency factors using the claimed methods is also

**tangible**, since an image having one value of transparency can be visually distinguished from an image having another value of transparency (e.g., as noted in the Application, a transparency factor of 1 may render an image opaque, while a transparency factor of 0 may render the image transparent), and **concrete**, since the results of the calculations are substantially repeatable.

To summarize, in claim 1 (amended to clarify the function of the alpha factor as defined in the Application text, and not for reasons related to patentability), a “transparency factor associated with the planar object surface” is assigned, after being calculated. In claims , 24, 26, and 28, the Applicant’s claimed methods “modulate the transparency of an image” of an object, or calculate “the transparency factor” of an image of an object, and as such, clearly comprise a practical application that achieves a useful, concrete, and tangible final result, as defined in the guidelines. *See Id.* at pgs. 20-22. Therefore, claims 1, 22, 24, 26, and 28 constitute patentable subject matter, and the rejection of these claims under 35 U.S.C. § 101 is improper.

#### §112 Rejection of the Claims

Claims 32, 34 and 37 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. The Office asserts, with respect to claim 37, that “it is unclear whether a computer readable medium or method is being claimed.” The Office also asserts, with respect to claims 32 and 34, that “a computer program not yet being executed in the computer such as the computer program written in a piece of paper is capable of being executed”. Unfortunately, no reply to the arguments presented by the Applicant in the prior response was rendered in the Office Action, and thus they are repeated below. That is, in response to the rejection under 35 USC § 112, second paragraph, the Applicant respectfully notes again that no *prima facie* case of indefiniteness has been established, and therefore, the Applicant respectfully traverses this rejection.

To make out a *prima facie* case of indefiniteness, three elements must be shown: interpretation of the claim in light of the specification; interpretation of the claim as one of ordinary skill in the art would interpret it; and that the limitations in the claim, or the subject matter not in the claim, does not reasonably define the invention. It is noted that “[in] relation to Section 112, second paragraph, the Examiner has the burden of showing that the proposed claim

language is indefinite to one of skill in the art.” *See* Patent Prosecution: Practice and Procedure Before the U.S. Patent Office by Irah H. Donner, pg. 831, 2002. This type of showing has not been made.

With respect to claim 37, it is clear that a “computer readable medium” with computer-executable instructions stored thereon for performing a method is being claimed. The specific language used in the claim is as follows:

**“A computer readable medium** having computer-executable instructions stored thereon for performing a method, the method comprising ....”

With respect to claims 32 and 34, it is clear that a processor and a computer readable medium are recited. The computer-readable medium comprises a storage device comprising a memory. A computer program capable of being executed from the computer-readable medium by the processor is also claimed. The specific language of the claims, amended to clarify what was already implicit in the prior language, and not for reasons related to patentability, is as follows:

“... a computer-readable medium comprising a storage device comprising a memory; and a computer program stored in the computer-readable medium and capable of being executed from the computer-readable medium by the processor ...”

One of ordinary skill in the art would have no difficulty in determining the claimed subject matter (a computer readable medium having stored thereon computer-executable instructions or a computer program), as well as its limitations. Therefore, since no *prima facie* case of indefiniteness has been established, reconsideration and withdrawal of the rejection of claims 32, 24, and 37 under 35 USC § 112, second paragraph, is respectfully requested.

#### §103 Rejection of the Claims

Claims 22, 24, 26, 28, 32, 34 and 37 were rejected under 35 USC § 103(a) as being unpatentable over Shinohara (U.S. 5,880,735; herinafter “Shinohara-735”) in view of Shinohara (U.S. 5,877,769; hereinafter “Shinohara-769”), Foley and Van Dam (“Fundamentals of

Interactive Computer Graphics,” Addison Wesley, pp. 722-729 (1983); hereinafter “Foley”), Demesa III et al. (U.S. 5,684,935; hereinafter “Demesa”) and Wells et al. (U.S. 5,253,339; hereinafter “Wells”). Claim 20 was also rejected under 35 USC § 103(a) as being unpatentable over Obata (U.S. 5,222,203; hereinafter “Obata”) in view of Shinohara-735, Shinohara-769, Foley, Demesa and Wells. First, the Applicant does not admit that Shinohara-735, Shinohara-769, Foley, Wells, Obata, or Demesa are prior art, and reserves the right to swear behind these references in the future. Second, since a *prima facie* case of obviousness has not been established in each case, the Applicant respectfully traverses these rejections.

The Examiner has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d (BNA) 1596, 1598 (Fed. Cir. 1988). The M.P.E.P. contains explicit direction to the Examiner in accordance with the *In re Fine* court:

In order for the Examiner to establish a *prima facie* case of obviousness, three base criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant’s disclosure. *M.P.E.P.* § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d (BNA) 1438 (Fed. Cir. 1991)).

The requirement of a suggestion or motivation to combine references in a *prima facie* case of obviousness is emphasized in the Federal Circuit opinion, *In re Sang Su Lee*, 277 F.3d 1338; 61 U.S.P.Q.2D 1430 (Fed. Cir. 2002), which indicates that the motivation must be supported by evidence in the record.

No proper *prima facie* case of obviousness has been established because (1) combining the references does not teach all of the limitations set forth in the claims, (2) there is no motivation to combine the references, and (3) combining the references provides no reasonable expectation of success. Each of these points will be explained in detail, as follows.

***The Combination of References Does not Teach All Limitations:*** Shinohara-735 teaches changing the transparency of polygons based upon the Z component of the unit normal vector **at each vertex**. See Shinohara-735, Col. 11, lines 37-43 (emphasis added). “The normal

vector of each vertex is found by taking the average of each normal vector of the polygons adjoining the vertex.” Shinohara-735, Col. 2, lines 2-4. The transparency of each pixel on a particular polygonal surface is then adjusted to reflect the transparency of the vertices which enclose the surface. *See* Shinohara-735, Col. 10, lines 33-49.

Thus, Shinohara-735 explicitly states that transparency changes are made using vertex normal vectors, and not the incident angle created by the intersection of a viewing surface normal vector with a planar surface, as claimed by the Applicant. While the Office attempts to equate the vertex angles in Shinohara-735 to the incident angle claimed by the Applicant and created by a viewing surface normal vector, these elements are simply not the same, and such is not taught by Shinohara-735. Thus Shinohara-735 has a fundamental deficiency: it does not “create an angle of incidence at the planar surface of the polygon” as asserted in the Office Action. Rather, as noted by Shinohara-735, “Nz: [is the] Z component of the unit normal vector **of the vertex**”. Shinohara-735, Col. 7, line 48 (emphasis added). This is reinforced by Shinohara’s title for this section for the patent: Conversion of **the vertex transparency** at the converter”. Shinohara-735, Col. 7, lines 35-36 (emphasis added). Further, the angle suggested for use by the Office, and created with respect to a vertex, is ambiguous. It is simply not usable as the “angle of incidence” claimed by the Applicant, because Shinohara-735 provides no unique planar surface to use as a reference (and does not need one, because the vertex normal vectors are used).

Thus, Shinohara-735 explicitly states that transparency changes are made using vertex normal vectors, and not the incident angle created by the intersection of a viewing surface normal vector with a planar surface normal vector, as claimed by the Applicant. None of the other references (Shinohara-769, Foley, Wells, Obata, or Demesa) serve to remedy this deficiency, and therefore, no combination of these references can provide what is claimed by the Applicant, namely, modulating “the transparency of an image of the object as a function of the angle of incidence” or “calculating the transparency factor from the angle of incidence ...”.

***No Motivation to Combine the References:*** Any transparency factor disclosed by Shinohara would have to be fixed according to a vector that is normal to a vertex, and not to a vector normal to a planar surface, as claimed by the Applicant. The resulting transparency factor provided by Shinohara would be totally unpredictable, since the incidence angle between a

vertex and a vector normal to the viewing surface is ambiguous. Using the combination suggested by the Office, even further ambiguity would be expected, due to the interaction between, for example, Obata's material characteristics, light intensity, and the illumination angle of incidence:

“The diffused transmitted light component may be calculated based upon a coefficient which is a function of the characteristics of the material forming the translucent object, the intensity of incident light from the light source and the angle of incidence of the incident light for illuminating the translucent object. The characteristics of the material include its transmissivity and its transparency.” Obata col. 2, lines 25-33.

One of ordinary skill in the art would therefore not be motivated to combine Shinohara and Obata, as the resulting transparency factor would be undefined. This same ambiguity attaches to any combination of Shinohara-735 and the other suggested references: Shinohara-769, Foley, Wells, and Demesa.

It is respectfully noted that the test for obviousness under § 103 must take into consideration the invention as a whole; that is, one must consider the particular problem solved by the combination of elements that define the invention. *See Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985) (emphasis added). References must be considered in their entirety, including parts that teach away from the claims. See MPEP § 2141.02.

Finally, as admitted by the Office, Obata “does not explicitly disclose that the viewpoint vector to be exactly the same as the light source vector”. The Office goes on to assert that it would have been obvious “to locate the viewpoint to the same position as the light source as the viewpoint position can be moved to the light source position.” However, nothing in Obata teaches or suggests *substituting* the viewpoint for the light source, which is what is urged by the Office. The Office also states that “the line-of-sight or viewpoint of a person is inherently normal to his eye/face.” This is simply not true, since the pupil of a person may move in various directions, and the resulting line-of-sight is in fact not “inherently normal” to the eye or the face. The use of such unsupported assertions in the Office Action does not satisfy the explicit requirements needed to demonstrate motivation as set forth by the *In re Sang Su Lee* court. Therefore, the Examiner appears to be using personal knowledge, and is again respectfully

requested to submit an affidavit as required by 37 C.F.R. § 1.104(d)(2). If it is not possible to supply such an affidavit, then it is respectfully requested that the rejections under 35 U.S.C. § 103 be reconsidered and withdrawn

***No Reasonable Expectation of Success:*** As the Office Action acknowledges, Obata does not teach “assigning alpha as a transparency factor associated with the planar object surface,” as claimed by the Applicant. This is because the color mixing taught therein is a function of several factors, as noted above, and therefore does not provide a transparency factor that depends on the angle of incidence claimed by the Applicant.

For example, how would Shinohara, which provides an ambiguous angle of incidence, be combined with Obata, which uses material characteristics, light intensity, and incidence angle to determine a diffused transmitted light component? The Office has never addressed this question, and the answer is unknown. Essentially, there is nothing in the references that serves to guide one of ordinary skill in the art with respect to a predictable outcome, that is, to a reasonable expectation of success. The same ambiguity arises when Shinohara-735 is combined with any of the other suggested references: Shinohara-769, Foley, Wells, and Demesa.

In summary, the references neither teach nor suggest the element of determining and assigning alpha as a transparency factor associated with a planar object surface, or modulating or calculating a transparency factor for an image of an object, as claimed by the Applicant, and the modification suggested by the Office does not lead to a reasonable expectation of success by one of ordinary skill in the art. In fact, the references teach away from such a combination, as any transparency factor provided would be ambiguous. Thus, the requirements of *M.P.E.P.* § 2142 have not been satisfied; and a *prima facie* case of obviousness has not been established with respect to the Applicant’s claim. It is therefore respectfully requested that the rejection of claims 20, 22, 24, 26, 28, 32, 34, and 37 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

**CONCLUSION**

The Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone the Applicant's attorney at (210) 308-5677 to facilitate prosecution of this Application. If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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